

RESPONSE

To: Commissioner of the Patent Office
(To: Examiner of the Patent Office)

1. Indication of International Application: PCT/JP03/11673

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4. Date of Order: 20. 07. 2004

5. Contents of Response

- (1) In the statement, among the inventions described in Claim 1 to Claim 8 of the present application, the novelty of the inventions described in Claim 1 to Claim 4 was denied, and the inventive step of the inventions described in Claim 1 to Claim 8 was denied, but this opinion is refuted as follows. Among Claim 1 to Claim 8, Claim 1 to Claim 4 are amended as in an amendment submitted with this response.
- (2) The inventions described in Claims 1 to 3 of the present application relate to a grinding process for grinding an outer peripheral surface of a rotated work by a rotary grindstone rotated by a wheel spindle. With respect to this, Document 1 (Japanese Patent Application Laid-open No. 7-24712) quoted in order to deny the novelty of the above relates to a technique, with respect to a pipeline laid underground, for correcting the pipeline by grinding a step portion of an existing pipe from a pipe inner surface and for cleaning the pipe inner surface, and an illustrated example teaches an arrangement in which a cleaning brush 22 is provided at the head of a grinding apparatus and a front guide 5, a front grinder 6, couplings 7 and 8, a rear grinder 9, etc. are joined to the apparatus at a rear of the cleaning brush 22. It is clearly a technique for grinding/cleaning an inner surface of an existing pipe 1, and its object and arrangement are different from those of the 'grinding process for grinding an outer peripheral surface of a work' described in Claims 1 to 3 of the present application. The opinion that there is no novelty is therefore improper.
- (3) The invention described in Claim 4 of the present application relates to a grinding apparatus including a rotary grindstone mounted to a wheel spindle to grind an outer peripheral surface of a work by the rotation of the rotary grindstone, and as described above with respect to Claims 1 to 3, the object and the arrangement

thereof are different from those of Document 1, which is directed toward the grinding and cleaning of an inner surface of a pipe.

In addition, Claim 4 of the present application is limited to a rotary brush mounted adjacent to the rotary grindstone for brushing the work ground by the rotary grindstone. In accordance with such an adjacent arrangement, it becomes possible to dispose the rotary brush concentrically with the rotary grindstone with high precision, and the two can rotate integrally. On the contrary, in the case of Document 1, as shown in FIG. 2, etc., the front guide 5 is disposed between the cleaning brush 22 and the front grinder 6, and the cleaning brush 22, the front guide 5, and the front grinder 6 are joined to one another via a shaft member. Unlike the present invention, since the cleaning brush 22 and the front grinder 6 are disposed so as to be apart from each other, it is difficult to arrange them concentrically with each other with high precision, and the novelty of the invention of Claim 4 is not denied thereby. Furthermore, in Document 1, in order for the grinding apparatus to quickly move to and fro within a long pipeline, guides 5 and 12 illustrated in a drawing are considered to be indispensable, and an arrangement in which such guides are eliminated and the cleaning brush 22 and the front grinder 6 are disposed adjacent to each other is not obvious from the technique of this Document. The invention of Claim 4 therefore has inventive step over Document 1.

(4) Claims 5 to 8 of the present application are dependent on the independent Claim 4 and, therefore, if the novelty and inventive step of the invention of Claim 4 over the prior art are admitted, the novelty and inventive step of these dependent claims are naturally admitted.

The novelty and inventive step of Claim 4 over Document 1 are as described in the explanation of the previous paragraph.

Document 2 (Japanese Patent Application Laid-open No. 7-276197) relates to a process and apparatus for grinding an inner surface of a pipe, and FIG. 3 therein illustrates a technique in which the outer diameter of a grinding brush A is made slightly smaller than the inner diameter of a stainless steel pipe, which is subject to grinding, and bristles 6 are widened by means of centrifugal force during grinding so as to come into contact with the pipe inner surface. There is no teaching or suggestion with regard to arranging such bristles 6 so as to be adjacent to a rotary grindstone. Document 2 is a technique related to grinding a pipe inner surface as in Document 1, is fundamentally different from the invention of Claim 4 of the present application, which relates to a technique for grinding an outer peripheral surface of a work, and does not at all teach the feature of Claim 4 that the rotary brush is mounted adjacent to the rotary grindstone. Therefore, the invention of Claim 4 cannot be arrived at even from a combination of Document 2 and Document 1, and the arrangements of Claims 5 to 8, which are dependent claims of Claim 4, are naturally not obvious.

In addition, Claims 5 to 8 are directed toward an arrangement in which the diameter of the rotary brush varies in accordance with the rotational speed of the wheel spindle mounted in the rotary grindstone, and in accordance with such an arrangement, when dressing with the rotary grindstone at a low rotational speed, the diameter of the rotary brush is made smaller than the diameter of the rotary grindstone, thus preventing interference between the rotary brush and a dresser, and when grinding a work, the diameter of the rotary brush is made larger than the diameter of the rotary grindstone, thus giving the effect of carrying out the removal of grinding flash and polishing of a ground surface at substantially the same time as carrying out grinding.

On the other hand, the bristles 6 of the grinding brush A of Document 2 simply extend in the radial direction as a result of rotation, and there is no arrangement

shown in which the range of extension thereof is adjusted in accordance with the conditions of use. Therefore, Document 2 is unrelated to the scope and spirit of Claims 5 to 8, and even a combination thereof with Document 1 does not make the scope and spirit obvious.

(5) As described above, the inventions described in Claim 1 to Claim 8 of the present application possess novelty and inventive step over Document 1 and Document 2, and should be granted a patent.

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